

**REMARKS**

Applicant has reviewed the Office Action mailed on February 12, 2004 as well as the art cited. Claims 15, 25, 28 and 37 are currently amended. Claims 33-34 and 42 are cancelled. Claims 1-32, 35-41 and 43-51 are pending in this application.

**Information Disclosure Statement**

The Examiner sets forth at page 2 of the Office Action that the Information Disclosure Statement submitted on June 21, 2000 fails to comply with 37 CFR 1.98(a)(2).

Applicant has resubmitted certain book listings which were originally submitted with the 1449 form for Examiner's review. Applicant respectfully requests that a copy of the 1449 form, listing all references that were submitted with the Information Disclosure Statement filed on June 21, 2000, marked as being considered and initialed by the Examiner, be returned with the next official communication.

**Claim Objections**

The Examiner objected to claims 16 and 26 due to insufficient antecedent basis for these limitations in claims 15 and 25, respectively. Claims 16 and 26 have been amended accordingly. Therefore, withdrawal of this objection is respectfully requested.

The Examiner objected to claims 37 and 40-42 due to insufficient antecedent basis for this limitation in the claims. Claim 37 has been amended accordingly. Therefore, withdrawal of this objection is respectfully requested.

**Drawing Objections**

The Examiner objected to the drawings under 37 CFR 1.83(a). Proposed drawings corrections are submitted herewith. Therefore, withdrawal of this objection and acceptance of the drawings is respectfully requested.

Rejections Under 35 U.S.C. § 112

Claim 27 was rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Amendment to the specification regarding Claim 27 has been submitted herewith. Therefore, withdrawal of this objection is respectfully requested.

Rejections Under 35 U.S.C. § 102

Claims 28-31 were rejected under 35 USC § 102(e) as being unpatentable over Rakib et al. (U.S. Patent No. 6,665,308). Applicant respectfully traverses this rejection. Claim 28 has been rewritten to include the limitations of dependent claim 34. The Examiner indicated the allowance of claim 34 over the prior art. As a result, claim 28 as amended is also allowable. Therefore the rejection of claim 28 under 35 U.S.C. § 102(e) is now moot.

Claims 29-36 depend from and further define allowable claim 28 and as a result are also allowable. Since the Applicant believes, Claims 29-36 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Rejections Under 35 U.S.C. § 103

To establish a case of prima facie obviousness, three basic criteria must be met:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based in the applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir 1991). MPEP § 2143 - § 2143.03.

Claim 1

Claims 1-2 and 4-6 were rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996.

Applicant respectfully traverses these rejections.

Claim 1 is directed to an equalization circuit. The circuit includes an input adapted to receive signals from a communications channel, a plurality of equalizer circuits coupled to the input and operable to generate a plurality of intermediate signals, and a selector circuit, responsive to the plurality of equalizer circuits, that selects one of the intermediate signals. The circuit further includes an output coupled to the selector circuit that receives the selected intermediate signal.

With regard to claim 1, the Examiner states that “Peile meets the following limitations: an input adapted to receive signals from a communications channel; a plurality of equalizer circuits coupled to the input and operable to generate a plurality of intermediate signals; **Claim 1** an output coupled to the selector circuit that receives the selected intermediate signal. **Claim 6**”

The Examiner correctly states that “Peile fails to teach the use of a selector circuit for choosing one of the output signals from the plurality of equalizers.”

Further, the Examiner asserts that “Gollamudi discloses the use of such a selector circuit in figure 2 of his adaptive parallel equalization system. Therefore it would have been prima facie obvious to one having ordinary skill in the art at the time the invention was made to use a switch or selector circuit to chose one of the outputs from a bank of parallel equalizers. The motivation to combine is that it is well known in the art that in a parallel configuration of equalizers, memory elements, channels etc. a switch is commonly used to selectively choose one of the plurality of connections or paths based on which equalizer has the best estimate of the channel (e.g. Rake receiver for CDMA).”

Applicant respectfully traverses the Examiner's assertions.

Applicant respectfully asserts there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. Peile (US Patent No. 4,821,289) states "the  $n$  symbols of a codeword of length  $n$  are transmitted simultaneously on  $n$  separate frequencies or channels. The receiver includes a plurality of  $n$  equalizers ... receiving the signals transmitted on the  $n$  channels, respectively." (Columns 1-2, Lines 67-3). Peile (US Patent No. 4,821,289) further states "The  $n$  equalizer outputs are connected to the  $n$  inputs of an error correction decoder. The error correction decoder views the  $n$  equalizer outputs as  $n$  symbols of an undecoded codeword." (Column 2, Lines 9-13). As a result, by placing a selector circuit, as discussed by Gollamudi, to select one output from the plurality of channels would cause  $n-1$  symbols of the codeword to be lost. Thus, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. As a result, claim 1 should be allowed.

Also, Applicant respectfully asserts that the cited references alone or in combination do not teach or suggest the equalization circuit of claim 1. In particular, Peile (US Patent No. 4,821,289) does not teach or suggest *an input* adapted to receive signals from *a communications channel*, and a plurality of equalizer circuits coupled to the input and operable to generate a plurality of intermediate signals as found in claim 1. In contrast, Peile (US Patent No. 4,821,289) discusses "A multiple channel parallel equalizer system adapted to decode a codeword of length  $n$  whose  $n$  symbols have been transmitted and received on  $n$  separate channels." (Column 6, Lines 21-24). Also, Peile (US Patent No. 4,821,289) discusses that "[t]he error correction decoder views the  $n$  equalizer outputs as  $n$  symbols of an undecoded word." (Column 2, Lines 10-12). Gollamudi does not overcome this deficiency. Thus, Peile (US Patent No. 4,821,289) alone or in combination does not teach or suggest the equalization circuit of claim 1. Therefore, claim 1 should be allowed.

Claim 3 was rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, further in view of Suzuki (U.S. Patent No. 5,602,507).

Applicant respectfully traverses this rejection.

Claims 2-6 depend either directly or indirectly from allowable claim 1 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 2-6 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

#### Claim 9

Claims 9, 11, and 13-16 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996.

Claim 9 is directed to an equalization circuit. The circuit includes an input adapted to receive signals from a communication channel, an equalizer bank having at least two equalizers coupled in parallel and coupled to the input and a decoder bank having at least two error correction decoder circuits coupled in parallel, each error correction decoder circuit coupled to a corresponding one of the at least two equalizers of the equalizer bank. The circuit further includes a selector circuit coupled to the decoder bank that selects an output signal of one of the at least two equalizer circuits based on processing of the decoder bank and an output coupled to the selector circuit that receives the selected output signal.

Applicant respectfully traverses this rejection.

The references alone or in combination do not teach or discuss the equalization circuit of claim 9. In particular, as discussed above with respect to claim 1, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. Also, as discussed above with respect to claim 1, Peile (US Patent No. 4,821,289) and Gollamudi alone or in combination do not teach or suggest the equalization circuit of claim 9. Therefore, claim 9 should be allowed.

Claim 10 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, further in view of Schilling (U.S. Patent No. 6,466,610).

Claim 12 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, further in view of Suzuki (U.S. Patent No. 5,602,507).

Claim 17 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, further in view of Kurtz (U.S. Patent No. 6,574,207).

Applicant traverses these rejections.

Claims 10-17 depend either directly or indirectly from allowable claim 9 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 10-17 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

#### Claim 18

Claims 18, 21, and 23-26 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996.

The references alone or in combination do not teach or discuss the equalization circuit of claim 18. In particular, as discussed above with respect to claim 1, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. Also, as discussed above with respect to claim 1, Peile (US Patent No. 4,821,289) and Gollamudi alone or in combination do not teach or suggest the equalization circuit of claim 18. Therefore, claim 18 should be allowed.

Claim 22 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, further in view of Suzuki (U.S. Patent No. 5,602,507).

Claim 27 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996, Szczepanek (U.S. Patent No. 5,299,193).

Applicant respectfully traverses these rejections.

Claims 21-27 depend either directly or indirectly from allowable claim 18 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 21-27 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

#### Claim 28

Claim 32 is rejected under 35 USC § 103(a) as being unpatentable over Rakib et al. (U.S. Patent No. 6,665,308) in view of Peile (U.S. Patent No. 4,821,288).

Claim 33 is rejected under 35 USC § 103(a) as being unpatentable over Rakib et al. (U.S. Patent No. 6,665,308) in view of Kurtz (U.S. Patent No. 6,574,207).

Claims 35-36 are rejected under 35 USC § 103(a) as being unpatentable over Rakib et al. (U.S. Patent No. 6,665,308) in view of Peile (U.S. Patent No. 4,821,289).

Applicant respectfully traverses these rejections.

Claim 28 has been rewritten to include the limitations of dependent claim 34. The Examiner indicate the allowance of claim 34 over the prior art. As a result, claim 28 as amended is also allowable. Claims 29-32 and 35-36 depend either directly or indirectly from allowable claim 28 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 29-32 and 35-36 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required. Therefore the rejection of claims 29-32 and 35-36 under 35 U.S.C. §102(e) are now moot.

#### Claim 37

Claims 37 and 38 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996.

Claim 39 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Rakib et al. (U.S. Patent No. 6,665,308).

Claim 40 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz et al. (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Schilling (U.S. Patent No. 6,466,610).

Claim 41 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Szczepanek (U.S. Patent No. 5,299,193).

Applicant respectfully traverses these rejections.

Claim 37 has been rewritten to include the limitations of dependent claim 42. The Examiner indicated the allowance of claim 42 over the prior art. As a result, claim 37 as amended is also allowable. Claims 38-41 depend either directly or indirectly from allowable claim 37 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 38-41 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required. Therefore the rejection of claims 38-41 under 35 U.S.C. §102(e) are now moot.

Claims 43 and 44 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996.

Applicant respectfully traverses these rejections.



The references alone or in combination do not teach or discuss the equalization circuit of claim 43. In particular, as discussed above with respect to claim 1, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. Also, as discussed above with respect to claim 1, Piele (US Patent No. 4,821,289) and Gollamudi alone or in combination do not teach or suggest the equalization circuit of claim 43. Therefore, claim 43 should be allowed.

Claim 44 depends either directly or indirectly from allowable claim 43 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claim 44 is allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claim at this time. However, the Applicant reserves the right to address said additional rejections to said claim if a further response is required.

#### Claim 45

Claims 45 and 46 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Peile (U.S. Patent No. 4,821,288).

Applicant respectfully traverses these rejections.

The references alone or in combination do not teach or discuss the equalization circuit of Claim 45. In particular, as discussed above with respect to claim 1, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi. Also, as discussed above with respect to claim 1, Piele (US Patent No. 4,821,289) and Gollamudi alone or in combination do not teach or suggest the method of claim 45. Kurtz and Peile (US Patent No. 4,821,288) do not overcome this deficiencies. Therefore, claim 45 should be allowed.

Claims 46-48 depend either directly or indirectly from allowable claim 45 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 46-48 are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claim at this time. However, the Applicant reserves the right to address said additional rejections to said claim if a further response is required.

Claim 47

Claim 47 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Peile (U.S. Patent No. 4,821,288) further in view of Schilling (U.S. Patent No. 6,466,610).

Claim 48 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Peile (U.S. Patent No. 4,821,288) further in view of Szczepanek (U.S. Patent No. 5,299,193).

Claims 49 and 50 are rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Peile (U.S. Patent No. 4,821,288) further in view of Kurtz (U.S. Patent No. 6,574,207).

Applicant respectfully traverses these rejections.

The references alone or in combination do not teach or discuss the telecommunications system of claim 49. In particular, as discussed above with respect to claim 1, there is not a reasonable expectation of success of modifying Peile (US Patent No. 4,821,289) with Gollamudi.

Also, Peile (US Patent No. 4,821,289) and Gollamudi alone or in combination do not teach or suggest the equalization circuit of claim 49. Peile (US Patent# 4,821,288) and Kurtz do not overcome this deficiencies. Therefore, claim 49 should be allowed.

Claim 51 is rejected under 35 USC § 103(a) as being unpatentable over Peile (U.S. Patent No. 4,821,289) in view of Kurtz (U.S. Patent No. 6,574,207) further in view of Gollamudi et al., IEEE International Symposium, Vol. 2, pp. 13-16, May 12-15, 1996 further in view of Rakib et al. (U.S. Patent No. 6,665,308).

Applicant respectfully traverses this rejection.

Claims 50-51 depend either directly or indirectly from allowable claim 49 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 50-51

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Attorney Docket No. 100.015US01

Title: PARALLEL EQUALIZATION FOR SYSTEMS USING TIME DIVISION MULTIPLE ACCESS

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are allowable for the above reasons, Applicant may not have put forth responses to additional rejections to said claim at this time. However, the Applicant reserves the right to address said additional rejections to said claim if a further response is required.

Allowable Subject Matter

Claims 7-8, 19-20, 34, and 42 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

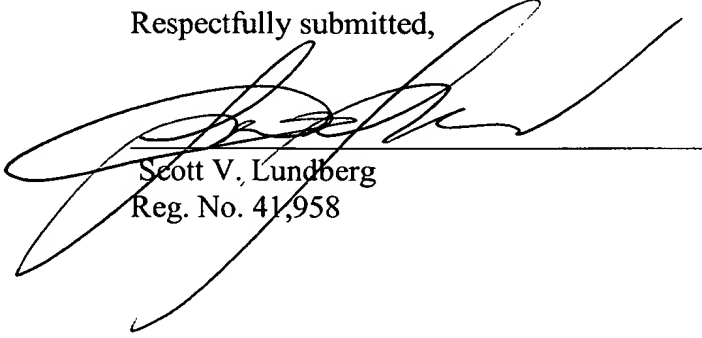
CONCLUSION

Applicant respectfully submits that claims 1-32, 35-41 and 43-51 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

Respectfully submitted,

Date: 6-14-04



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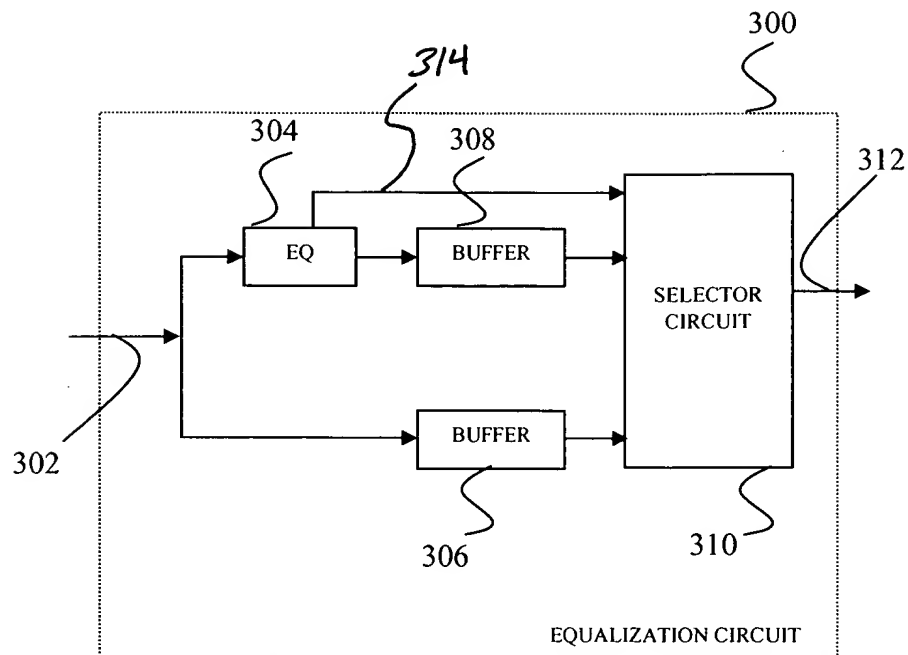


FIG. 3

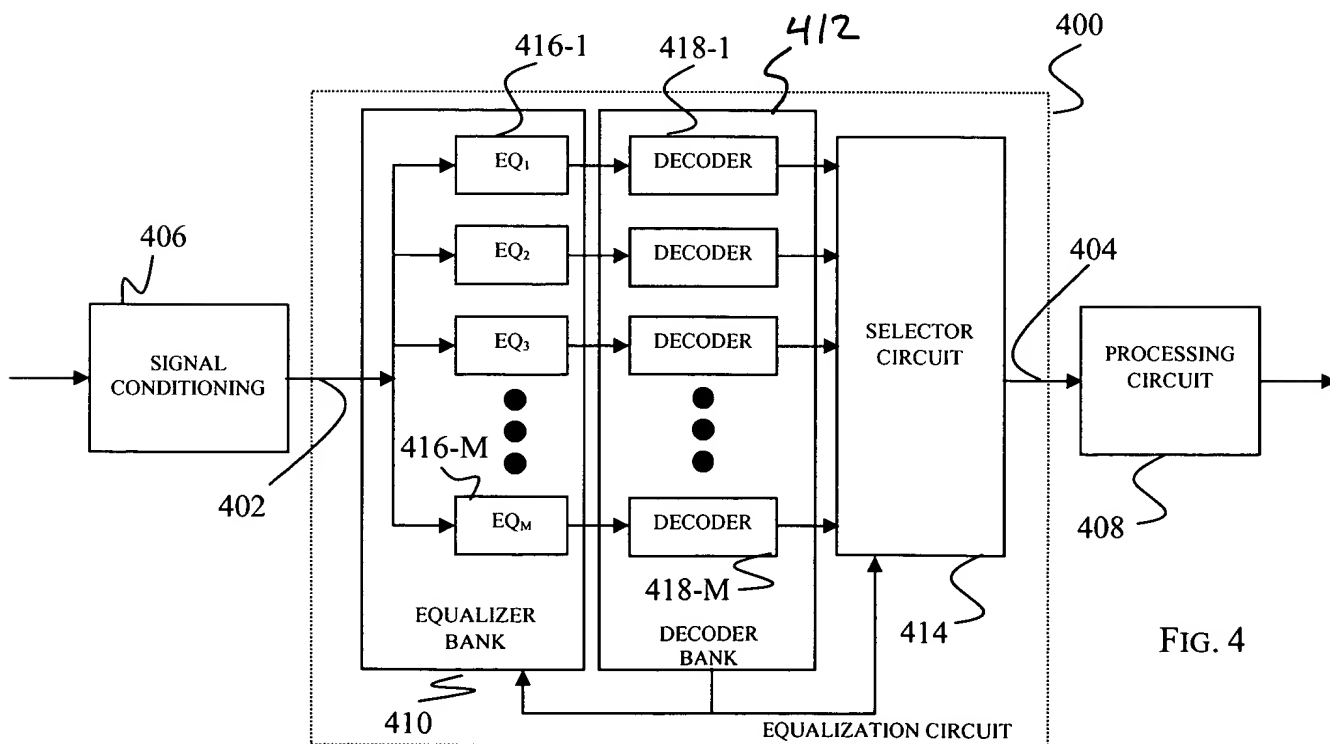


FIG. 4